AMENDMENTS TO THE SPECIFICATION:

On page 1, immediately following the title please insert headings as follows:

BACKGROUND OF THE INVENTION

Field of the Invention

The paragraph beginning on page 1, line 1 has been changed as follows:

The ~~present~~ invention relates to droplet deposition apparatus and in particular drop on demand ink jet printing apparatus.

On page 1, after line 2 please insert a heading as follows:

Related Technology

The paragraph beginning on page 3, line 12 has been changed as follows:

In a back-to-back architecture there is double the heat generation than in a single row print head as there are double the number of actuators and chips. As discussed above, it is desirable to ~~minimise~~ minimize the thickness of the support to aid manufacture. But, any reduction in thickness of the support reduces the volume of material available to transfer heat away from the actuators.

On page 3, after line 16 please insert a heading as follows:

SUMMARY OF THE INVENTION

The paragraphs beginning on page 3, line 18 have been changed as follows:

The ~~present~~ invention seeks to address this and other problems.

Thus, according to one aspect of the ~~present~~ invention there is provided droplet deposition apparatus comprising a chassis and at least first and second actuation means, each actuation means comprising an electrically actuable droplet ejection actuator and electrical drive circuitry to provide actuation signals to that actuator, wherein said chassis comprises two parallel, opposed thermal management surfaces, an internal fluid cavity situated between said thermal management surfaces such that fluid in said cavity establishes thermal contact with said surfaces and fluid ports arranged on the exterior of said chassis and communicating with said internal cavity for supply and circulation of fluid through said internal cavity; the first and second actuation means being mounted respectively on the two thermal management surfaces.

The paragraph beginning on page 4, line 10 has been changed as follows:

Preferably the chassis is formed of multiple parts, said parts being combined to define the interval cavity. The multiple parts may be formed by ~~moulding~~ molding, or some other method and preferably the surfaces to which the actuators are mounted are machined to a required flatness. The surfaces preferably being machined after the multiple parts have been combined.

The paragraphs beginning on page 5, line 3 have been changed as follows:

In another aspect, the ~~present~~ invention seeks to provide an improved method of manufacture.

Accordingly, the ~~present~~ invention consists in another aspect in manufacturing droplet deposition apparatus which comprises a chassis and at least first and second droplet ejection actuators; the method comprising the steps of: forming a chassis with first and second parallel, opposed thermal management surfaces and an internal fluid cavity situated between

said thermal management surfaces; mounting the first and second droplet ejection actuators respectively on the first and second thermal management surfaces such that fluid in said cavity establishes thermal contact with both actuators; and providing a common nozzle plate which is disposed in a plane orthogonal to said thermal management surfaces and which defines a first set of nozzles for the actuator and a second set of nozzles for the second actuator such that the mutual alignment of the first and second sets of nozzles is independent of the mutual alignment of the first and second actuators.

On page 5, after line 17 please insert a headings as follows:

BRIEF DESCRIPTION OF THE DRAWINGS

The paragraph beginning on page 5, line 18 has been changed as follows:

The ~~present~~ invention will now be described, by way of example only, with reference to the following diagrams in which:

The paragraph beginning on page 5, line 23 has been changed as follows:

Figure 3 shows apparatus according to the ~~present~~ invention in an exploded view of a chassis, two actuators and a nozzle plate arrangement;

The paragraph beginning on page 6, line 3 has been changed as follows:

Figure 6 shows the components seen in Figure 3 together with an exploded view of the remaining components of apparatus according to the ~~present~~ invention; and

On page 6, after line 7 please insert a heading as follows:

DETAILED DESCRIPTION

The paragraph beginning on page 6, line 9 has been changed as follows:

Figure 1 depicts a printhead of the prior art. Channels 6 are formed in a sheet of piezoelectric material 2, which is ~~polarised~~ polarized in the direction of the arrow P. The walls that separate the channels have electrode material applied to them such that a voltage applied between the electrodes can cause the walls to deflect in shear. This initiates a pressure wave in the ink contained within the channel, with the pressure wave converging at a nozzle formed in the nozzle plate 4 to produce droplet ejection.

The paragraph beginning on page 7, line 8 has been changed as follows:

Back to back actuators are known in the prior art as depicted in Figure 2. The actuators are each formed from layers of piezoelectric material. Layers 30,31 and 35,36 are ~~polarised~~ polarized in opposite directions as shown by the arrows P and laminated together to form sheets. These sheets are bonded to opposite sides of a central support 40. Channels 6 are sawn into the sheets and an electrode material 38 deposited on the defining surfaces of the dividing wall. The channels are closed by covers 32, 37.

The paragraphs beginning on page 7, line 16 have been changed as follows:

Generally, the apparatus comprises a chassis 100 formed by the bonding together of two concave, plastics ~~moulded~~ parts 102 and 104. The chassis 100 is seen in its entirety in Figure 3 and the two parts are shown individually in Figures 4 and 5. The chassis provides support in the form of thermal management surfaces (as further described below) for two actuation means, each of these comprising a piezoelectric actuator 106,108 together with associated drive circuitry (as further described below). A nozzle support 110 is shaped and

dimensioned to be bonded both to the chassis and to the nozzle plate 112 and to provide marginal support for the nozzle plate.

Turning to the detail of the chassis 100, towards the front of the substrate there are found parallel mounting surfaces 50a, 50b, spaced apart a distance of the order 3 mm in a direction perpendicular to the plane of the surfaces. A tighter tolerance on the distance between the surfaces (than could generally be expected in a ~~moulding~~ process) is achieved through a machining step where one or both mounting surfaces are mechanically or chemically machined to provide flatter surfaces. The present invention enables machining of the mounting surfaces without needing to machine other portions of the chassis.

The paragraphs beginning on page 8, line 25 have been changed as follows:

The material of the component parts is a thermally conductive plastic and suitably one known as Coolpoly and commercially available from Coolpolymers, Inc. The plastic provides good thermal conductivity of between 1.2 W/mK and 20W/mK depending on the material chosen and is ~~mouldable~~ moldable enabling external features described above and internal features described later to be cheaply and quickly manufactured. The ability to machine portions requiring higher tolerances that that which may be achieved by ~~moulding~~ molding is advantageous. Thermally conductive polymers are available that are electrically insulating and capable of being ~~moulded~~ molded, for example injection ~~moulding~~ molding. They can be based on liquid crystal polymers, poly phenylene sulphide, polyamide and polbutylene terephthalate as examples

By ~~moulding~~ molding the component parts separately and joining together it is possible to provide internal features to the chassis that aid alignment of the two components, provide fluid seals and / or ensure a desired flow path of liquid through the chassis. By

~~moulding~~ molding and combining it is also possible to form narrow internal channels that allow the thickness of the chassis in key dimensions to be ~~minimised~~ minimized.

The paragraph beginning on page 10, line 9 has been changed as follows:

The chassis 100 is formed by the bonding together of two ~~moulded~~ parts 102, 104 as described above. The surfaces 50a and 50b can be machined to ensure that the surfaces are flat, parallel and of the correct spacing. The first and second piezoelectric actuators 106 and 108 are then bonded to the respective surfaces 50a, 50b. Datum surfaces may be provided in the chassis to aid alignment. The piezoelectric actuators 106, 108 can, for example, be bonded to the surfaces 50a, 50b with thermally conductive adhesive.